

(1) Please define Western blot and Northern blot and their potential usages. (25%)

(2) Which of the following substances or items is (are) under homeostatic control? Exactly how they are regulated in our body is an important question for physiologists. Please use one of the following items to define the regulatory mechanism of homeostasis. (25%)

- A. BUN.
- B. Creatinine.
- C. Na^+ and K^+ .
- D. Glucose.
- E. Blood pressure.

(3) The trend of physiological research direction has been shifted from *in vivo* to *in vitro*. What are *in vivo* and *in vitro* studies in physiological aspect? What are the reasons which lead to this direction shift? (25%)

(4) Please describe how different cells can communicate with each other and how you can study it. (25%)